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Acid-treated gelatin generally functions better to prevent the slowing of disintegration time, but does not have as good producibility as alkali-treated gelatin, whereas conversely, alkali-treated gelatin has good producibility, but tends to be inferior to acid-treated gelatin in terms of preventing the slowing of disintegration time.

In contrast, dual-treated gelatin has a high jelly strength (normally 200-300 bloom), and a relatively low viscosity, which makes it superior in terms of both producibility and ability to prevent the slowing of disintegration time.

The proportion in which to mix the gelatin and citric acid is normally 0.1-10 parts by weight of the latter to 100 parts by weight of the former, as adding less than 0.1 parts by weight citric acid will make it difficult to obtain the effect of the invention, and adding more than 10 parts by weight will make it difficult to form a preparation.

The readily soluble preparation in the present invention is made by suitably mixing the aforesaid gelatin and citric acid together with conventional compounding ingredients such as D-sorbit, purified water, glycerin, preservative, etc.

By coating some suitable content such as vitamin E, vitamin A or cod-liver oil using the film composition prepared, as per the aforesaid mixing formulation, according to the conventional method, a readily soluble preparation with a film that is sufficiently soluble and is able to prevent deterioration of solubility over time can be manufactured with good production efficiency.

Although the film in the present invention can be used generally on any readily soluble preparation, it is particularly suited to coating soft capsules.

Embodiments of the present invention will be described below.

Embodiments 1-3 and Comparative examples 1-3

Six types of film compositions were prepared at 60°C according to the mixing formulation in Table-1.

Table-1

Material composition	Embodiments			Comparative example		
	1	2	3	1'	2'	3'
Structure component	Parts by weight					
Dual-treated gelatin (300 bloom)	100	---	---	100	---	---
Acid-treated gelatin (150 bloom)	---	100	---	---	100	---
Alkali-treated gelatin (150 bloom)	---	---	100	---	---	100
Citric acid	1	1	1	---	---	---
D-sorbit	10	10	10	10	10	10
Purified water	Rest	Rest	Rest	Rest	Rest	Rest
Total quantity	270	270	270	270	270	270

Using the resultant film compositions 1-3 and 1'-3', soft capsule preparations 1-3 and 1'-3' were manufactured by the conventional method using a capsule-making

machine (made by Morishita Jintan KK).

The general properties and preparation speed of the soft capsule preparations are shown in Table-2 and Table-3, respectively.

Table-2

Particle size of capsule	8 mm φ
Total weight of capsule	270 mg
Weight of content	230 mg
Weight of film	40 mg
Thickness of film	0.2 mm
Content	Wheat germ oil

Table-3

Manufacture speed Quantity per second	Soft capsule preparation			Comparative example		
	1	2	3	1'	2'	3'
	42 ¹⁾	24 ¹⁾	42 ¹⁾	32 ¹⁾	24 ¹⁾	42 ¹⁾

¹⁾ Manufacture conditions

100g of the resultant soft capsule preparations were placed into a sealed container and stored at 40°C, after which disintegration time was measured according to the disintegration test method in the 10th edition of the Japanese Pharmacopoeia. Measurement results are shown in Table-4.

Table-4

Soft capsule disintegration time (minutes)	Embodiment			Comparative Example		
	1	2	3	1'	2'	3'
0	Within 2 mins	Within 2 mins	Within 2 mins	Within 2 mins	Within 2 mins	Within 3 mins
7	Within 2 mins	Within 2 mins	Within 2.5 mins	Within 3 mins	Within 3 mins	Within 3.5 mins
14	Within 2.5 mins	Within 2 mins	Within 3.5 mins	Within 3.5 mins	Within 4.5 mins	Within 10 mins
21	Within 3.0 mins	Within 2.0 mins	Within 5.1 mins	Within 2 mins	Within 4.0 mins	20 ¹⁾ mins ¹⁾
28	Within 3.5 mins	Within 4.0 mins	Within 8.0 mins	Within 9 mins	15 mins	---
35	Within 5 mins	Within 5 mins	Within 8.0 mins	20 ¹⁾ mins ¹⁾	20 ¹⁾ mins ¹⁾	---
42	Within 8 mins	Within 7 mins	29 ¹⁾ mins ¹⁾	---	---	---
49	Within 8 mins	Within 0 mins	---	---	---	---
56	Within 10 mins	---	---	---	---	---
63	Within 10 mins	Within 10 mins	---	---	---	---

1) Maximum value for disintegration test according to the Japanese Pharmacopoeia: 20 minutes